

Application No. 10/021,629
Response Dated 01/17/2006
Reply to Office Action of 10/17/2005

PATENT
Agent's Docket No. 12560-US

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A network management and service provisioning computing environment framework for of a network management and service provisioning system, the object oriented network management and service provisioning computing environment being coded in an object oriented statically typed language and configured to invoke polymorphic operations, the framework computing environment comprising:
 - a. ~~a registry for run-time registration of at least one plug-in brokering access to network management and service provisioning enabling technologies;~~
 - a.{{b-}} a directive parser for configured to process, processing at run-time, at least one managed data network entity specification file including directives;
 - b.{{e-}} a generic lexical analyzer interpreting, at run-time, at least one directive parsed from the managed data network entity specification file;

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c.{{d.}} an executable code implementation of a single managed entity object class, the single managed entity object class being run-time derivable via type derivation into a derivation hierarchy of managed data network object types based on the run-time parsed entity directives, the single management entity object class implementation further comprising an executable code implementation of an invoke function ~~for invoking~~ configured to cause the execution of at least one operation by having a name via a function call to the invoke function using the name of the operation as a parameter to the invoke function;

d.{{e.}} a dictionary of operations holding a roster of operation names of ~~registered operations~~ registered with the dictionary of operations in accordance with a run-time parsed operation directive in respect of a corresponding managed data network object type, each registered operation ~~defining~~ referencing a method associated with a derived the managed data network object type, the dictionary of operations providing run-time support for polymorphic operation invocation; and

e.{{f.}} a message interpreter ~~for processing~~ messages received from at least one network management and service provisioning software application at run-time by calling the invoke function to cause the execution of invoking a registered operation by the corresponding operation name on an instance of the a derived managed data network object type by using the corresponding operation name as a parameter of the invoke function,

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wherein a separation is achieved between managed data network entity instances, ~~enabling technologies and network management and service provisioning~~ software applications, the separation enabling independent development, maintenance and troubleshooting in providing network management and service provisioning, and the run-time derivation of the single managed entity object class and invoking the operation by name minimizing the need to re-code and re-compile ~~framework software application code~~ in supporting of new managed entity object types, ~~the dictionary of operations providing run-time support for polymorphic operation invocation.~~

2. (currently amended) A network management and service provisioning computing environment ~~framework~~ as claimed in claim 1, wherein the derivation of the a managed data network object type in the derivation hierarchy includes the specification of at least one attribute.
3. (currently amended) A network management and service provisioning computing environment ~~framework~~ as claimed in claim 1, wherein the managed data network entity specification file includes at least one human-readable file.
4. (currently amended) A network management and service provisioning computing environment ~~framework~~ as claimed in claim 3, wherein each human-readable file is an attribute file holding attributes corresponding to a single managed data network object type derivable at run-time in one of a direct and an indirect manner from the single managed entity object class.
5. (currently amended) A network management and service provisioning computing environment ~~framework~~ as claimed in claim 1, wherein the managed data network entity specification file comprises at least one executable code implementation of ~~[[the]] a named operation having the operation name.~~

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6. (currently amended) A network management and service provisioning computing environment framework as claimed in claim 1, wherein the at least one attribute directive includes an attribute specification.
7. (currently amended) A network management and service provisioning computing environment framework as claimed in claim 6, wherein the attribute specification further specifies managed data network object type inheritance.
8. (currently amended) A network management and service provisioning computing environment framework as claimed in claim 1, wherein further comprising a plug-in registry for run-time registration of at least one plug-in brokering access to network management and service provisioning enabling technologies, the network management and service provisioning enabling technologies include ~~including~~ support for at least one of a persistence method and a persistence entity.
9. (currently amended) A network management and service provisioning computing environment framework as claimed in claim ~~1~~ 8, wherein the managed data network entity specification file further comprises a command sequence ~~the at least one directive further specifies specifying~~ a command sequence to be followed in using a specific registered enabling technology.
10. (currently amended) A network management and service provisioning computing environment framework as claimed in claim 9, further comprising at least one registered ~~enabling technology~~ enabling technology-specific lexical analyzer stub for interpreting at least one ~~enabling technology~~ enabling technology-specific directive.
11. (currently amended) A network management and service provisioning apparatus implementing the network management and service provisioning ~~framework~~ computing environment claimed in claim 1.

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12. (previously amended) A method of invoking an operation by name at run-time in respect of a run-time derived managed data network object type in performing network management and service provisioning, the method comprising steps of:
- a. loading at run-time at least one managed data network entity specification file; registering with a network management and service provisioning framework at least one plug-in brokering access to at least one network management and service provisioning enabling technology;
 - b. parsing at least one directives from each run-time loaded managed data network entity specification file loaded by the framework;
 - c. deriving at run-time a single managed entity object class into a managed entity object type derivation hierarchy of at least one managed data network object type via type derivation in accordance with at least one entity directive parsed at run-time from the managed data network entity specification file;
 - d. registering with a dictionary of operations at run-time at least one operation name specified in the managed data network entity specification file via an operation directive, the operation name corresponding to an operation implemented by the derived managed data network object type; and

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e. ~~processing at least one message received by the framework at run-time~~
from at least one network management and service provisioning software
application by invoking the registered operation at run-time by the corresponding
operation name registered with the dictionary of operations on an instance of the
derived managed data network object type via a function call to an invoke
function implemented by the single managed entity object class, the invoke
function taking the name of the operation as a parameter, run-time lookups of
operation names in the dictionary of operation names providing run-time support
for polymorphic operation invocation.

~~the framework acting as an enabler by separating wherein separation is~~
~~achieved between managed data network entities, enabling technologies and~~
~~software applications, the separation enabling independent development,~~
~~maintenance and troubleshooting in providing network management and service~~
~~provisioning, and the run-time derivation of the single managed entity object class~~
~~and invoking the operation by name minimizing the need to re-code and~~
~~re-compile code in supporting new managed entity object types, and as a~~
~~facilitator therebetween, dictionary lookups providing run-time support for~~
~~polymorphic operation invocation.~~

13. (currently amended) A method as claimed in claim 12, wherein processing the at
least one received message ~~received by the framework~~, the method comprises a
further step of ~~deriving~~ populating a containment hierarchy of managed data
network object type instances at run-time corresponding to field installed data
network equipment.

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14. (currently amended) A method as claimed in claim 12, further comprising run-time registering at run-time with a plug-in registry at least one plug-in brokering access to at least one network management and service provisioning enabling technology, ~~wherein registering with the framework at least one plug-in, the method further comprises a step of run-time registering the at least one plug-in.~~
15. (original) A method as claimed in claim 14, wherein run-time registering the at least one plug-in, the method further comprises a prior step of: selecting the at least one plug-in for registration thereof.
16. (withdrawn) A method as claimed in claim 12, wherein parsing the at least one loaded managed data network entity specification file ~~loaded by the framework~~, the method further comprises a step of: run-time loading the at least one managed data network entity specification file.
17. (currently amended) A method as claimed in claim ~~16~~ 12, wherein run-time loading the at least one managed data network entity specification file, the method further comprises a prior step of: selecting the at least one managed data network entity specification file.
18. (canceled)
19. (currently amended) A method as claimed in claim 12, wherein deriving ~~a~~ the single managed entity object class via type derivation, the method further comprises a step of setting at least one attribute in accordance with the parsed entity directive.

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20. (currently amended) A method as claimed in claim 12, wherein prior to processing the at least one message received by the framework from the at least one software application, the method further comprises a step of: registering the at least one software application with the network management and service provisioning computing environment framework.
21. (currently amended) A method as claimed in claim 14-12, wherein processing the at least one received message, ~~received by the framework~~; the method further comprises a step of: implementing a directive specified in the at least one managed data network entity specification file using a lexical analyzer stub associated with the ~~at least one a~~ corresponding plug-in.
22. (currently amended) A method as claimed in claim 21, wherein implementing the directive, the method further comprises a step of: deriving a containment hierarchy by instantiating a managed data network object type.
23. (currently amended) A method as claimed in claim 21, wherein implementing the directive, {{{ the method further comprises a step of: effecting a change in a network state of a managed data transport network in a realm of management.
24. (currently amended) A method as claimed in claim 12, wherein subsequent to processing the at least one received message ~~received by the framework~~; the method further comprises a step of: sending a subsequent message to the software application.
25. (canceled)
26. (previously presented) A method as claimed in claim 12, wherein registering the at least one operation name, the method further comprises a step of: making a dictionary entry in the dictionary of operations.

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27. (previously presented) A method as claimed in claim 26, wherein making the dictionary entry in the dictionary, the method further comprises a step of using name spaces techniques to associate each operation name with a corresponding derived managed data network object type.